

National Institute of Biomedical Imaging and Bioengineering

DRAFT Strategic Plan

January 11, 2005



NIBIB Strategic Plan

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MESSAGE FROM THE DIRECTOR

As the first Director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB), I am pleased to present our Strategic Plan. This plan is designed to define key goals, optimize the use of resources, and install tools and processes for smart management in order to help achieve our mission and to realize our vision. The successful implementation of our Strategic Plan will enable the NIBIB to integrate the engineering, physical and life sciences to effect a maximum positive impact on the national health care agenda.

The goals, strategies, and objectives outlined in this plan address the opportunities and challenges facing our Institute. Through strategic planning retreats and group discussions, an NIBIB working group of senior management identified scientific priorities, opportunities, and challenges across the programs of the Institute. This group collaborated with our National Advisory Council, the scientific community, professional organizations, and the public to create this document. For example, the NIBIB hosted several scientific planning meetings to obtain feedback from the research community.

The Strategic Plan complements and builds upon planning processes that are already underway within the NIBIB. By design, the plan is not a budget document. Instead, it targets the most promising research goals that might reasonably be achieved within a 5-year time frame and focuses on long-term, trans-agency scientific themes.

Although the initial document is designed to be a 5-year plan, we consider it a work in progress. We will revisit and refine the plan on an annual basis. Goals, strategies, and objectives will continue to evolve and mature through the NIBIB's iterative planning process, conducted in conjunction with our National Advisory Council and our stakeholders.

STATEMENT OF COMMITMENT

The National Institute of Biomedical Imaging and Bioengineering is entrusted by our Nation's citizens to improve the health of all people. The Institute is committed to driving medical innovation and expanding biomedical knowledge for this and future generations.

MISSION

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) is the newest of the National Institutes of Health (NIH) research Institutes and Centers. Public Law 106-580, which was signed into law on December 29, 2000, authorized the establishment of the NIBIB to provide a research home for the development and application of new technologies and techniques for the delivery of health care in the 21st century. The NIBIB brings together the research communities of biomedical imaging, bioengineering, the physical sciences and the life sciences to advance human health by improving quality of life and reducing the burden of disease.

Our Mission Is To:

Improve human health by leading the development and accelerating the application of biomedical technologies.

The Institute is committed to integrating the engineering and physical sciences with the life sciences to advance basic research and medical care.

The Scope of NIBIB's Mission

NIBIB's mission statement, which reflects the Institute's statutory mandate, encompasses the following activities:

1. ***Develop new biomedical imaging and bioengineering techniques and devices*** to better understand disease and to fundamentally improve the diagnosis, treatment, and prevention of disease.
2. ***Enhance existing imaging and bioengineering modalities***, for example, by supporting advances that reduce cost or improve function, by exploring new uses of existing technologies, or by combining technologies for new purposes.
3. ***Support related research in the engineering, physical, and mathematical sciences*** through collaborations with other NIH Institutes and Centers and other Federal agencies, including the Department of Defense (DoD), the Department of Energy (DOE), the Food and Drug Administration (FDA), the National Institute of Standards and Technology (NIST), and the National Science Foundation (NSF).
4. ***Encourage interdisciplinary research areas***, such as molecular imaging, bioinformatics, biomaterials, biosensors, computational biology, image-guided interventions, modeling, nanotechnology, rehabilitation technology, target-specific imaging agents, telemedicine, and tissue engineering. The NIBIB will support interdisciplinary research teams through existing and novel mechanisms, while also sustaining individual investigator-initiated research.
5. ***Support studies to assess the effectiveness of new biologics, materials, processes, devices, and procedures*** to determine the quality of a new technology and its most appropriate use and to guide the development of the next generation of technologies. To provide the necessary mix of technical and clinical expertise in evaluation studies, the NIBIB will collaborate with disease-specific Institutes at the NIH and other Federal agencies.
6. ***Develop technologies for early disease detection and assessment of health status***. Early detection and treatment of disease, even before noticeable symptoms appear, has the potential to greatly reduce morbidity, mortality, and the cost of disease.
7. ***Develop advanced imaging and engineering techniques for conducting biomedical research at multiple scales***, from the molecular and genetic to the whole-body level and to entire populations. The NIBIB will also support efforts to integrate data from these different levels, which may provide unique insights that could not be achieved *via* single-scale approaches.

Beyond the research activities outlined above, the NIBIB will support training and education as well as the dissemination of health information to physicians, other

health care providers, and the general public. In addition, the NIBIB will consider ethical issues in the use of new and emerging technologies for diagnosis and treatment.

CURRENT STATUS

In 2004, the NIBIB embarked on a strategic planning process to identify long-term goals for the next 3 to 5 years. As an initial step in planning for the future, the group first considered the current state of the science within the Institute's mission and the Institute's progress in leading advances in these areas.

In the last quarter century, there has been a revolution that has brought engineering and the physical sciences to greater prominence in the biomedical field. This revolution has had, and will continue to have, significant ramifications for medical practice. For example, sophisticated imaging technologies have reduced the need for exploratory surgery. Implanted therapeutic devices are increasingly used as effective treatments for cardiac rhythm abnormalities, joint dysfunction, and impaired neurological function.

These and other advances have led to the growth of the medical device and diagnostics industry with worldwide sales approaching \$200 billion. This industry stimulates continued advances in new treatments and therapies by investing approximately 7 percent of revenues in research and development.

Bioengineering has emerged as a vibrant discipline. Today there are more than 65 bioengineering departments at U.S. colleges and universities. There is also an increased emphasis on biomedical science in engineering and physical science departments. The fields of bioengineering and imaging will be further enhanced by multidisciplinary input from chemical, electrical, and mechanical engineers, as well as chemists and physicists.

Biomedical imaging is now an indispensable tool for the diagnosis and treatment of a variety of diseases. In the early twentieth century, incremental advances in imaging were achieved at a relatively slow rate. However, in the last 40 years, improvements and new discoveries in imaging technologies have occurred much more rapidly. The x-rays of over 100 years ago have been replaced by the discovery of ultrasonic, radioisotope, and optical imaging, computed tomography, and magnetic resonance imaging (MRI). In addition, the scalability of imaging methods is growing – ranging from visualization of the whole body and individual organs, to cellular, sub-cellular, molecular, and atomic imaging.

The creation of the NIBIB occurred at an extraordinary time. Discoveries in biomedical imaging and bioengineering have already had an enormous impact on health care. These disciplines are ripe with opportunities for major scientific advances. The NIBIB is well-positioned to further advance these fields through support of technology development; promotion of integrated, multidisciplinary, and collaborative approaches to biomedical

research; leadership of initiatives on health disparities and the aging population; dissemination of research findings; and development of training programs.

The NIBIB is uniquely suited to support technology development. Unlike any other NIH Institute or Center, the NIBIB's mission is focused on technology development. The Institute has a mandate to enable and promote fundamental discoveries, and to support the design, development, translation, and assessment of technological capabilities in biomedical imaging and bioengineering.

The NIBIB promotes integrated, multidisciplinary, and collaborative approaches to biomedical research. The Institute coordinates with other Federal agencies and NIH Institutes and Centers to support research and research training through existing NIH funding mechanisms. NIBIB leads in exploring novel approaches to support interdisciplinary research and training.

The NIBIB addresses our Nation's pressing health concerns, including America's aging population and health disparities. The Institute provides leadership to develop cross-cutting research and training in biomedical imaging and bioengineering to reduce health disparities.

The NIBIB informs the public about research. The NIBIB disseminates research findings to physicians, other health care providers, the research community, and the general public. Through the Web site, publications, and other outreach efforts, the Institute communicates how its research agenda dramatically advances the Nation's health.

The NIBIB is committed to the advancement of bioengineering, biomedical imaging, and the quantitative sciences in biomedicine through comprehensive training programs. The NIBIB provides training opportunities in bioengineering and biomedical imaging *via* existing NIH mechanisms and new approaches. The Institute actively reaches out to students to disseminate information about these programs. NIBIB-funded training programs are designed to fill critical gaps in career continuums and to enhance participation of underrepresented populations.

The NIBIB is a proper steward of public trust, and allocates resources responsibly. The Institute properly manages resources and seeks opportunities to leverage funding through joint efforts with industry, other NIH Institutes and Centers, and other Federal agencies. The Institute assesses the actual and potential outcomes of supported research to ensure the most effective allocation of resources. The NIBIB also considers ethical issues in the use of new and emerging technologies for diagnosis and treatment.

VISION

We will profoundly change health care.

*NIBIB will push the frontiers of health care technology
to make the possible a reality.*

The NIBIB will lead the development of revolutionary technologies that will change the face of medical care across America and around the world. The Institute will partner with industry, academia, and other Federal agencies to provide innovative and safe biomedical technologies that improve public health and reduce suffering due to injury and illness. The NIBIB will unite the engineering and physical sciences with the life sciences to bring forth new ways of thinking that will accelerate discovery and technology development. With a global vision and a public health mission, the Institute will aim for personalized health care, early detection of disease, and treatments that are minimally-invasive, cost-effective and widely accessible.

Among the advances that NIBIB envisions are:

- The development of technologies that will detect early, preclinical, molecular events to identify patients at risk. For example, molecular imaging and high-throughput technologies to evaluate genes for screening disease.
- Smart sensors that will use chemical and physiologic signals from the body to release drugs at the right site, at the right time, and at the right dose. For example, glucose-activated insulin-delivery systems that will effectively replace the function of the pancreas for people with diabetes.
- Living engineered tissue capable of growth and normal function to repair damaged tissues or organs resulting from heart attack, kidney failure, arthritis, or other conditions; to eliminate the need for repeated surgeries; to overcome the current limitations of artificial organs and joints; and to alleviate the shortage of organs for transplantation.
- Minimally-invasive, image-guided, or robotic-assisted micro-surgery that will become the standard of care for surgical procedures.
- Telemedicine advances to broaden access to health care among the underserved. Portable diagnostic devices will enable gathering of physiological, biochemical, and diagnostic image data non-invasively in rural and non-hospital settings. Transmission of this data in real time to major health care centers will be possible through nationally and internationally managed medical networks.

- Personalized medical therapy with drug selection and dosing based on the unique biochemical fingerprints of each patient's genetics. Image-guided techniques will facilitate early diagnosis and more precise drug delivery. The drugs themselves will be encoded for direct delivery to specific cells or organs as well as imaging beacons capable of reporting successful interaction of the drug with diseased cells.
- New approaches that will facilitate the quantitative understanding, of the relationship among elements of complex biological systems and allow for integration across biological scales, from gene to organ to the whole body. These approaches will be used to predict biological and pathological events.

To honor the public trust, the NIBIB will push toward the full realization of these and other medical technologies, many yet undiscovered. The Institute envisions a day when disease is preventable, health is predictable, and the treatments of today are a thing of the past.

VALUES

The NIBIB has a commitment to continually revolutionize medical technology to improve human health worldwide. Our success in this mission is based upon the acceptance of shared core values:

- ***Excellence.*** We consistently seek and achieve the best.
- ***Innovation.*** We are willing to take risks, readily embrace new approaches, and actively pursue ground-breaking ideas.
- ***Integrity.*** We act as ethical, open, and honest stewards of the public trust.
- ***Partnership.*** We work in collaborative efforts to maximize the beneficial impact on human health.

THE PLAN: GOALS, STRATEGIES, AND OBJECTIVES

To accomplish NIBIB's mission, the Institute has developed a series of goals, strategies, and objectives designed to maximize the Institute's impact on human health. This framework will shape the Institute's direction over the next 5 years and determine how NIBIB will allocate resources to support and enhance scientific research. In implementing this plan, the Institute will seek continuous stakeholder input and make adjustments as warranted. The Institute will further leverage its intellectual and financial resources through joint ventures with the private sector and other Federal agencies. The NIBIB will use tools and processes for effective management.

The goals outlined in the plan have been broadly grouped into areas of scientific and operational emphasis. Goals describe the state the Institute could achieve with the successful implementation of this plan. Each goal has an associated set of strategies that are the broad actions the Institute will take to effectively pursue the goal. Each goal and set of strategies also has an associated set of objectives. Objectives provide some measures of progress toward achieving a goal and can be monitored to ensure that appropriate progress is being made.

Although the initial document is designed to be a 5-year plan, we consider it to be a living document and plan to revisit it annually. Goals, strategies, and objectives will continue to evolve through NIBIB's iterative planning and evaluation process, conducted in conjunction with its National Advisory Council and stakeholders.

I. AREAS OF SCIENTIFIC EMPHASIS

A. Interdisciplinary Research

Goal 1. A strong extramural research community focused on discovery, development, and application of science and technology to improve health.

Some important areas of research in the engineering, physical, and imaging sciences have not been traditionally well represented at the NIH. The NIBIB will dedicate the majority of its resources to support the underrepresented research communities that fall within our mission. With an emphasis on interdisciplinary activities, our portfolio will include a significant number of multiple-investigator grants and interdisciplinary projects, as well as the more traditional single-investigator R01 grants.

Strategies:

- Set priorities based on scientific merit, scientific opportunities, public health needs, and the unique mission of the NIBIB.
- Support individual investigator-initiated projects that advance the NIBIB mission.
- Encourage team science.
- Promote systems engineering and the integration of multiple engineering disciplines to enhance novel technology development.
- Encourage and develop new investigators in the expanding research fields of engineering, physical, and imaging sciences.
- Encourage international collaboration.

- Identify and develop cross-Institute and cross-agency mechanisms to co-fund projects with significant technology components.

Objectives:

- The research community in bioengineering, biomedical imaging, and interdisciplinary science research is enlarged and strengthened.
- The number of research projects at the interface of the physical and life sciences increases.
- The NIBIB research portfolio is balanced between basic discovery research and the development and application of emerging technologies.
- NIBIB resources support new investigators in the interdisciplinary fields of bioengineering and biomedical imaging.

Goal 2. Targeted research programs in areas of special opportunity or need that take advantage of novel technological advances and scientific discoveries.

The NIBIB will target specific biomedical research areas to take advantage of novel technological advances and discoveries in the physical sciences; address public health needs and priorities; and solve challenges that prevent significant advances in health care. Achievement of this goal requires information about emerging technologies and scientific advances, challenges, and public health needs; collaborations with industry, other NIH Institutes and Centers, other Federal agencies, and academia; a dedicated budget; and leveraging of funding and research resources to compensate for budget constraints.

Strategies:

- Identify and support areas of particular promise or special need and a select group of large-scale, high-impact projects.
- Utilize collaborations between intramural and extramural divisions.
- Provide a set-aside budget for targeted activities.
- Leverage funds and resources through joint ventures.

Objectives:

- Select projects that provide profound improvements in medical care are designed and implemented.

- Program announcements or other initiatives that target critical areas such as bioinformatics and computational modeling, tissue engineering, sensors and measurement instruments, molecular imaging, image-guided interventions, and low-cost imaging are released.

Goal 3. Accelerated translation of promising technologies to improve human health.

Scientific knowledge and discoveries are increasing at a tremendous rate. However, efforts to translate these findings into new therapies, diagnostics, and preventative agents are often obstructed. The NIBIB supports the development of novel technologies and the subsequent translation of those technologies into applications for the benefit of public health. In accordance with the Congressional mandate that the NIBIB “facilitate the transfer of technologies to medical applications,” the Institute is committed to the following strategies and objectives.

Strategies:

- Include validation, evaluation, and effectiveness studies as objectives in initiatives for technology research.
- Address intellectual property and regulatory issues.
- Promote entrepreneurial training opportunities for students and academic researchers.
- Promote translational research.
- Collaborate and leverage resources with stakeholders – including industry, regulatory agencies, academia, and professional organizations – to address barriers and capitalize on mutually beneficial opportunities.

Objectives:

- An NIBIB office of technology transfer and industrial relations is created.
- A consortium of Federal agencies, industry, and academia is established to address specific challenges to bringing new technologies to market.
- Information is disseminated about NIBIB-supported discoveries and innovations that possess market potential.
- Technology translation sessions are held periodically with grantees, industry, academic technology transfer experts, other NIH Institutes and Centers, other Federal agencies, and private foundations.

- A database is developed to track products resulting from NIBIB-supported research and periodic studies are conducted to assess technology development and transfer from NIBIB-funded grants.
- A joint initiative with NSF promoting entrepreneurship in universities is launched.
- Collaborations are established with appropriate agencies – such as NIST and FDA – to contribute to the development of standards for biomedical technologies.
- Research that evaluates the impact of technology performance data on the outcome of research studies and clinical trials is promoted.

Goal 4. Reduced health disparities through new and affordable medical technologies and increased involvement of underserved populations and underrepresented minorities in biomedical research.

As the NIBIB plans programs to improve minority health and address health disparities, one broad area of exploration is the potential of various technologies and reductions in the costs of these technologies to improve access for underserved populations. Another approach will be to investigate the potential for imaging and bioengineering to improve the prevention, diagnosis, and treatment of diseases for which these disparities are most pronounced.

Strategies:

- Promote research on the development of new and affordable medical technologies.
- Partner with industry to reduce the cost of existing medical technologies and to make them more widely available.
- Increase opportunities for minority investigators to participate in NIBIB's research.
- Utilize training programs to attract underrepresented minorities to bioengineering and biomedical imaging research careers across the career continuum.
- Develop and expand linkages with minority organizations and professional societies.
- Increase dissemination of information on NIBIB and research advances to minority-serving institutions and minority communities.
- Educate minority patient populations on disease management and quality care.

Objectives:

- The development and use of low-cost medical technologies and telehealth is supported through NIBIB initiatives.
- Program initiatives targeting underserved populations and underrepresented minorities are initiated to increase their participation in biomedical imaging and bioengineering research.
- Interactions between minority institutions/organizations and the NIBIB are established to enhance the development of NIBIB's programs and facilitate participation by NIBIB in meetings, conferences, and other activities targeting minority populations.
- Activities and programs are developed to educate minority patient populations on the value of imaging and technology development to health care.

Goal 5. An intramural research program with interdisciplinary emphasis.

The intramural research program will engage high-quality research and training in both the biomedical imaging and the bioengineering fields. Priorities will focus on specific projects that have broad, national impact and on multidisciplinary programs that complement research in other NIH intramural programs.

Strategies:

- Implement recommendations of a Blue Ribbon Panel and the NIBIB Advisory Council in establishing the program and actively seek advice from stakeholders during the initial growth of the intramural program.
- Develop intramural research capabilities that are not readily implemented in the extramural community and that leverage and complement existing intramural programs at NIH and other agencies.
- Support training in interdisciplinary research at multiple educational levels that will result in a high impact on health care.

Objectives:

- The extramural community and Federal agencies provide input into the direction, scope, and productivity of NIBIB's intramural program.
- The administrative infrastructure for the intramural program is established.

- A Scientific Director for intramural research is recruited.
- Unique research programs that build on NIH strengths and complement other NIH intramural research programs are created.
- A strong intramural research training component is established.
- Collaborations between the intramural and extramural research and training programs are in place.

B. Interdisciplinary Research Training

Goal 1. Biomedical research training programs that integrate the physical, engineering, and life sciences.

Interdisciplinary research and career development training programs help develop a cadre of biomedical imaging and bioengineering research scientists who can lead the advancement of these growing scientific fields. NIBIB's support for training programs will help bridge the gaps between the biological, physical, and engineering sciences by attracting and training new students, as well as supporting the training and career development of existing researchers to advance the prevention, diagnosis, and treatment of disease.

Strategies:

- Train engineers and physical scientists in biology and medicine and biomedical researchers in the engineering and physical sciences.
- Facilitate career development for physicians and physician scientists in bioengineering and biomedical imaging research.
- Emphasize training in team science.
- Utilize resources and expertise from other agencies and foundations where appropriate.
- Address specific training needs in understaffed disciplines.
- Promote academic curricula development in entrepreneurship, including commercialization, technology transfer, and regulatory topics.

Objectives:

- The number of physicians, engineers, and scientists conducting biomedical imaging and bioengineering research in the clinical setting is increased.

- A research program for medical residents is established that supports the participation of residents on NIBIB research grants.
- A program is initiated to support the critical transition of postdoctoral researchers to independent investigators.
- Interdisciplinary training and career development programs are created that encompass fundamental research skills and interactions of physical, quantitative, and biomedical scientists.
- Institutional training programs are developed to train a new generation of team-oriented researchers in order to accelerate the pace of technological discoveries.
- Innovative programs are established to support the funding of investigators new to the NIBIB.

II. AREAS OF OPERATIONAL EMPHASIS

A. Alliances and Partnerships

Goal 1. Strategic alliances that maximize the impact of NIBIB on national and international health care.

Effective alliances and partnerships with NIBIB stakeholders, other NIH Institutes and Centers, other Federal agencies, academia, and biomedical industries are critical to the success of NIBIB's mission of accelerating the applications of novel technologies to health care. Collaborations resulting from these alliances will help maintain relevant state-of-the-art research and development programs, leverage resources among public and private entities, enhance the Institute's image for the lay public, and ensure support of the broad scientific community. Effective alliances will establish the NIBIB as a national leader in multidisciplinary biomedical research and training.

Strategies:

- Partner with industry, other NIH Institutes and Centers, Federal agencies, non-profit organizations, and academia for mutual benefit.
- Identify complementary strengths, resources, and objectives by participating in strategic planning with partners.
- Expand and strengthen working relationships with stakeholders and partners.

Objectives:

- Joint programs and initiatives are established with industry, NIH Institutes and Centers, academia, other Federal agencies, international organizations, and others.
- Regular and *ad hoc* meetings are held with representatives of technical societies and biomedical industry organizations to plan and coordinate activities and partnerships.
- Topical meetings are held with congressional and advocacy representatives to showcase and explain the impact of NIBIB-supported health care advances.
- Trans-NIH and inter-agency consortia are created that focus on multidisciplinary biomedical research at the interface of the physical and life sciences and enhance communication among the life and quantitative science communities.
- NIBIB staff provides leadership at scientific, engineering, and medical meetings related to the Institute's mission.

B. Outreach, Education and Communication

Goal 1. A public that is educated and informed about the value of biomedical technology.

Communicating research findings and health messages to the public is an important component of the NIBIB's mission. This information needs to be disseminated to a wide audience in culturally appropriate ways. To accomplish this, NIBIB is expanding its communication efforts with the general public and the research community. Multiple media are being used to convey these messages, including print materials and fact sheets, the Web, and an exhibit booth.

Strategies:

- Communicate and disseminate reliable programmatic information and research advances to researchers, physicians, Congress, and the public.
- Address public concerns about medical technology.
- Collaborate on information dissemination with other NIH Institutes and Centers, Federal agencies, academia, and others.

Objectives:

- Expanded print and online information on the health impact of medical technology, including materials in Spanish is available.

- A grantsmanship tutorial about the NIH and the NIBIB's programs and funding opportunities is developed and presented at multiple venues.
- Briefings for members of Congress and their staff are provided on hot topic issues and the status of NIBIB-supported research.
- Mixed media presentations are created to present culturally appropriate medical technology information to targeted audiences at professional and scientific meetings.
- Publications describing the health benefits associated with advances in medical technology are produced and disseminated.
- Inquiries from the public, stakeholders, and Congress are addressed in a timely and factual manner.

C. Stewardship and Accountability

Goal 1. Proper stewardship of public funds and trust.

The NIBIB is a Federally-funded research Institute and is committed to maximizing the investment of available resources while preserving the highest level of scientific integrity and public accountability.

Strategies:

- Make transparent and accountable decisions regarding funding and award administration.
- Make decisions in a way that is consistent with our mission and Strategic Plan.
- Use checks and balances in the administration of grants and contracts.
- Obtain public input in the priority-setting process.

Objectives:

- A priority-setting process that includes program reviews, professional societies, patient advocacy groups, and our National Advisory Council is in place.
- An administrative infrastructure and business processes are instituted to ensure appropriate use of public funds.

- Grants management systems for tracking, reporting, and decision-making and financial management systems with audit and reporting measures are utilized.
- NIBIB participates in the NIH Public Trust Initiative.

SCIENTIFIC PRIORITIES

The scientific goals, strategies, and objectives outlined in this plan will enable the NIBIB to move forward with a prudent plan over the next 5 years while still retaining the flexibility to respond to discoveries and opportunities. Implementation of this agenda is highly dependent upon economic resources, scientific advances, and competing priorities. The following is an outline of priorities should the NIBIB be faced with economic constraints.

To accomplish its mission, the NIBIB will give high priority to the development of new investigators and the recruitment of established investigators from disciplines such as engineering, imaging, computational biology, and the physical sciences into biomedical research. These disciplines historically have not received emphasis in NIH funding.

The Institute will also stress extramural training programs that support the development of interdisciplinary researchers. The NIBIB will pursue programs and actions that encourage and facilitate the development of a strong cadre of interdisciplinary biomedical researchers capable of successfully competing for the NIH investigator-initiated R01 grant mechanisms. A high priority will be an NIBIB success rate for investigator-initiated research that is comparable to the rates for other NIH Institutes. If budgets are limited, the NIBIB will consider focusing resources on investigator-initiated research and adjusting individual grant levels to permit funding of additional awards.

The NIBIB recognizes that multiple investigators working synergistically on a research project can be more effective than individual investigators in solving complex biological or medical problems. Existing integrative programs like the Bioengineering Research Partnership Grants have proven highly effective in this capacity. Planned new programs, such as the Quantum grants, also offer promise as models for developing strong collaborative research efforts that will lead to improvements in health care. The NIBIB will maintain these programs as a priority at their current levels, but will expand them as additional resources become available.

An intramural research program complementary to our extramural program is integral to the long-term success of the Institute. Priority will be given to establishing an interdisciplinary training program that leverages existing intramural research programs at other NIH Institutes while building a modest intramural research program.